WPI Services

A Woman Owned Small Business

Capabilities Presentation

jwoulfe@wpiservices.com

303-351-2769

Find the optimal balance between system performance and cost efficiency.

WPI Services
Systems Engineering & Cost Optimization

LIFE CYCLE MANAGEMENT

TOTAL LIFE CYCLE SYSTEM MANAGEMENT

Balancing Two Overall Objectives:

Overall Performance

- Increase fleet system
- Sustain operational capability
- Increase Reliability, Availability, Maintainability (RAM)

Reduce Total Ownership Cost

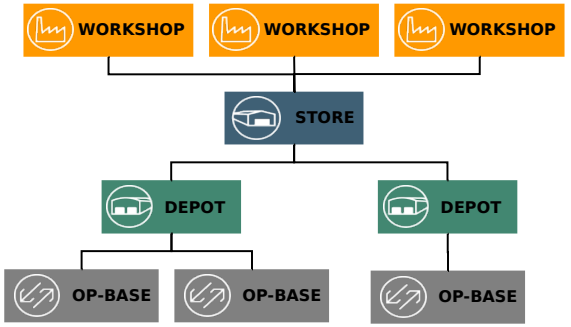
supportability

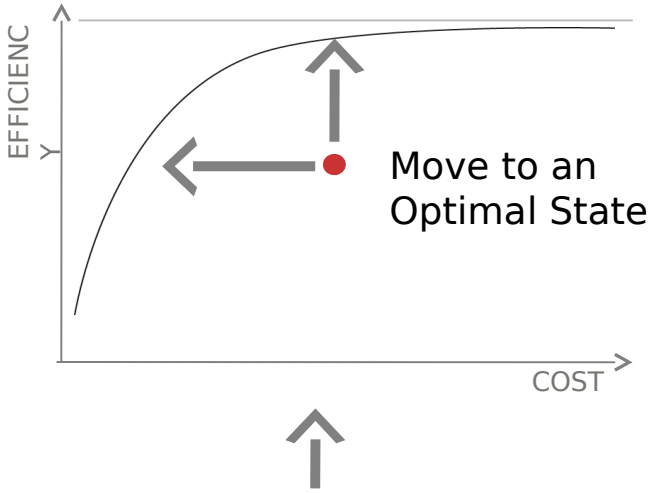
- Reduce frequency, duration and cost of downtime events
- Minimize logistics footprint
- Provide Affordable Sustainability

Our Lifecycle Management tools and analysis will allow you to accurately determine and minimize operational expenditures and provide efficient product lifecycle support.

OPTIMAL BALANCE BETWEEN OPERATIONAL PERFORMANCE AND OVERALL COST.

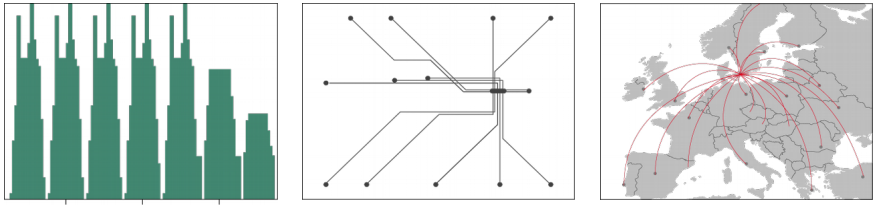
SUPPORT SOLUTION





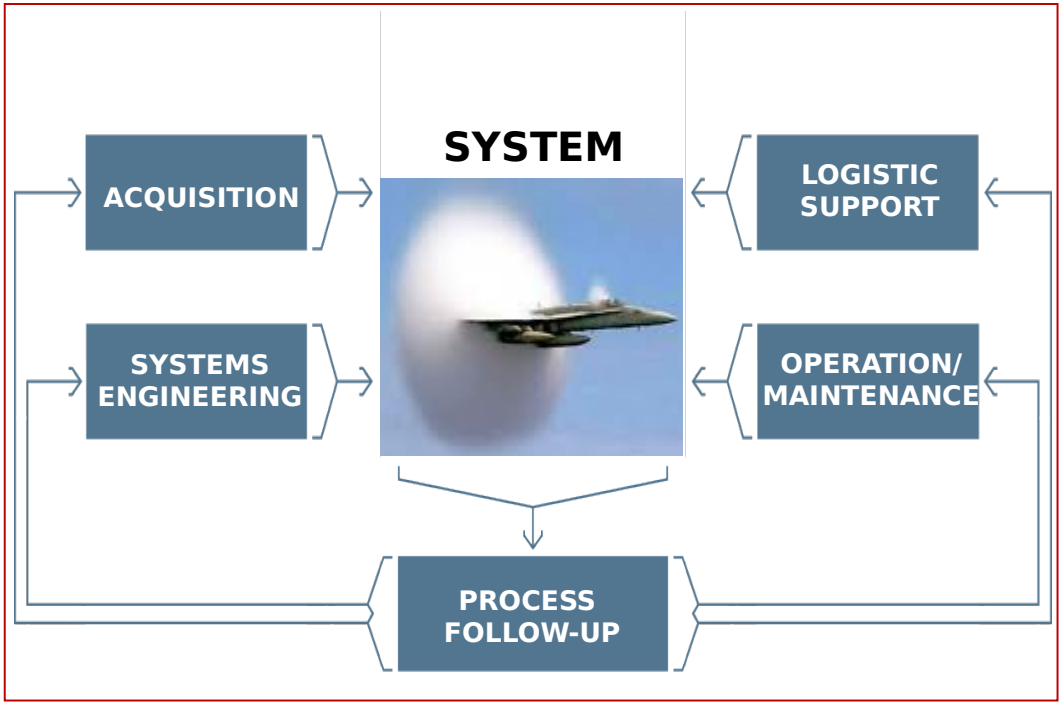
TECHNICAL SYSTEM

OPERATION



r World Class Capabilities save money and increase capability.

SUITE FOCUS AREAS.



We Guarantee that you can expect a 15% reduction in down-time and 20% lower costs because spares, personnel and equipment will be optimally positioned to support the operation.

WPI Services
Systems Engineering & Cost Optimization

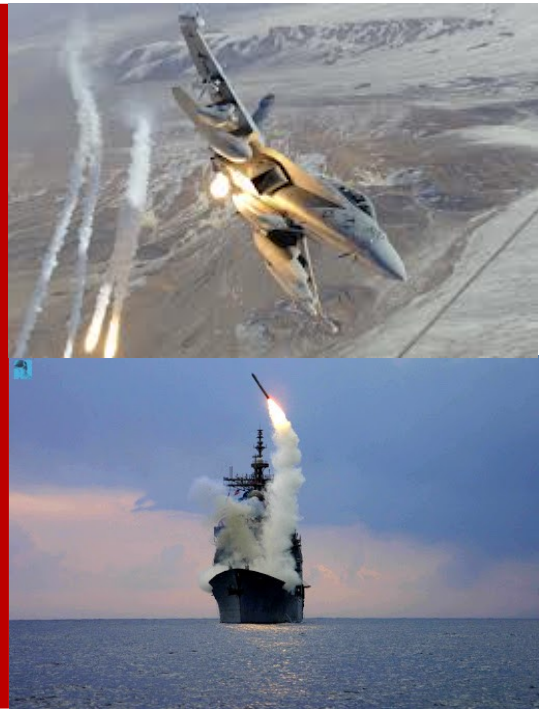
DEFENSE SOFTWARE USERS

Government Agencies
- US Air Force
- US Coast Guard
- UK Ministry of Def
- French Air Force
- Spanish Air Force
- Italian Defence
- Dutch MoD
- Belgian Defence
- Norwegian MoD (FLO)
- Swedish MoD (FMV)
- Australian Air Force
- Australian Navy
- Singapore MoD

US Tier I Primes
- Lockheed Martin
- Boeing
- Raytheon
- Bell Textron
- BAE Systems
- Heli-One
- Eurocopter

International Users
- Bundeswehr
- OCCAR
- EADS
- MTU Aero Engines
- Rheinmetall Landsysteme
- Blohm+Voss
- Eurocopter
- ThyssenKrupp Marine
- Airbus Military
- SAS Selex
- Thales
- MBDA
- Finmeccanica
- Dassault Aviation
- CAE
- ...and more

More than 600 licenses installed at ov
150 customer sites in 30 countries on 5 continer



INCREASED AVAILABILITY WHILE REDUCING COST.

We find the optimal balance between system performance and cost efficiency.

Our tools and product support methodologies are recognized across the world as industry leading.

Users typically see reductions of 20% in Operations and Maintenance Costs.

WPI Services
Systems Engineering & Cost Optimization

SYSTECON PRODUCT SUITE

STRATEGIC & TACTICAL ANALYSIS AND DECISION SUPPORT IN SYSTEM LOGISTICS

RESOURCES

- PERFORMANCE OVER TIME
- OPTIMIZE THE PRODUCT SUPPORT CONCEPT
- DIMENSION FACILITIES, PERSONNEL, EQUIPEMENT, ETC.

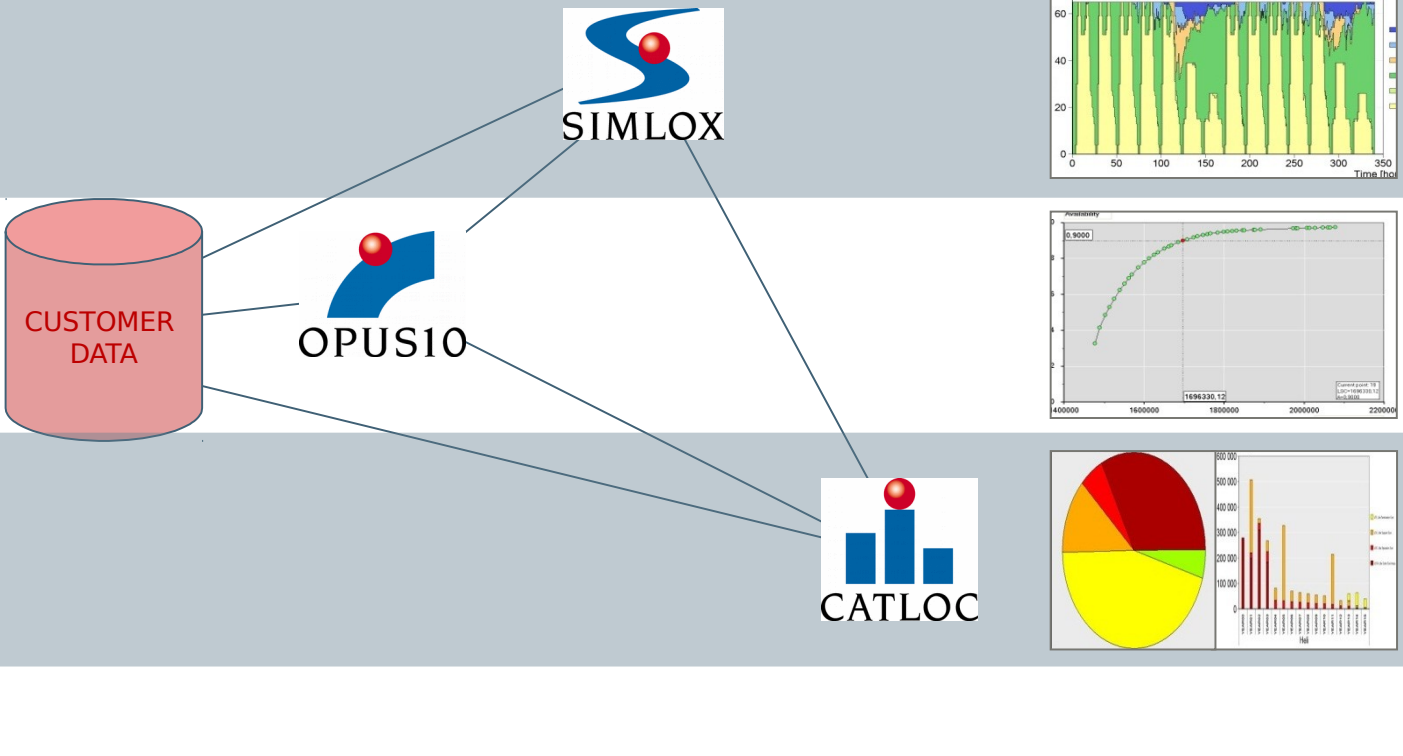
SPARES

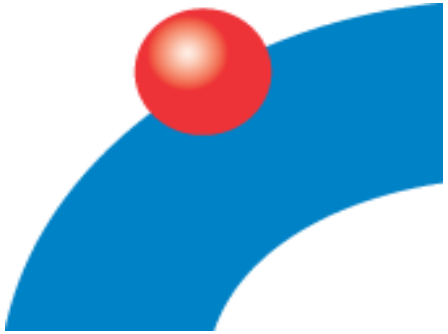
- LORA
- SIMULATE MISSION CAPABILITY
- ALLOCATION
- INCREASED EFFICIENCY

+ 20-50% COST CUT

COSTS

LCC ANALYSES
PROFIT/COST ANALYSES
BUDGET & FORECASTS
COMPARING SOLUTIONS
COST CONTROL



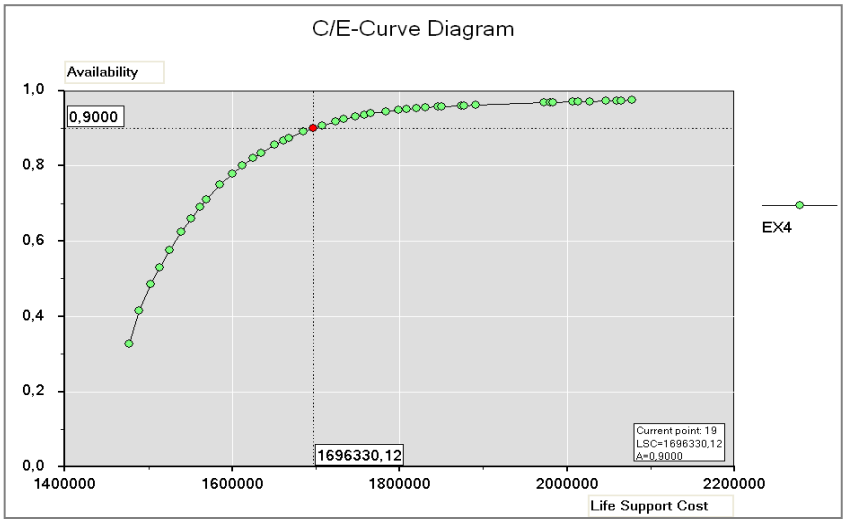


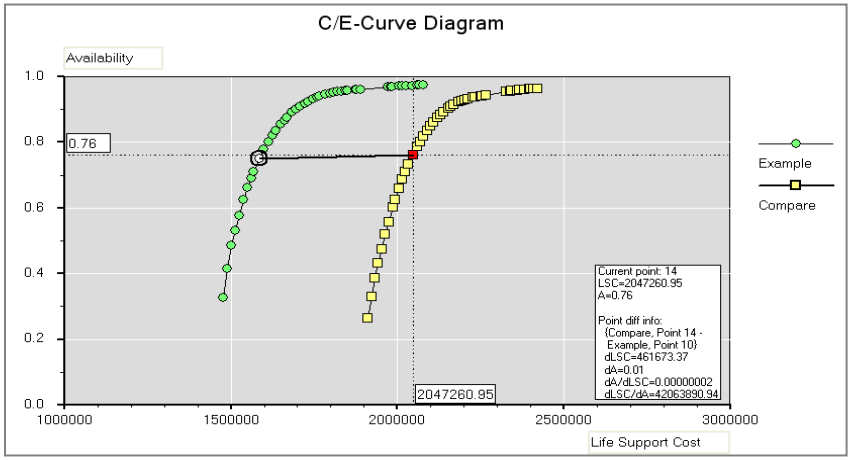
OPUS10

Logistic Support & Spares Optimisation

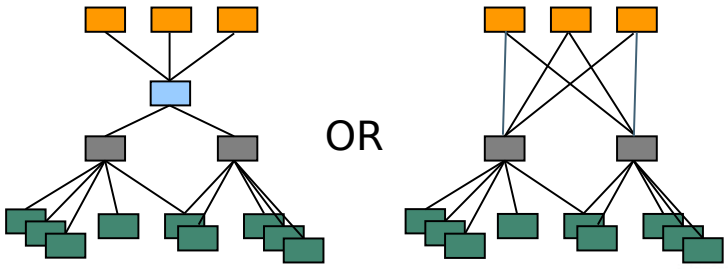
OPUS10

Strategic and tactical optimization that facilitates maximum availability at minimum cost





Optmization of spares, repair resources & support organisation

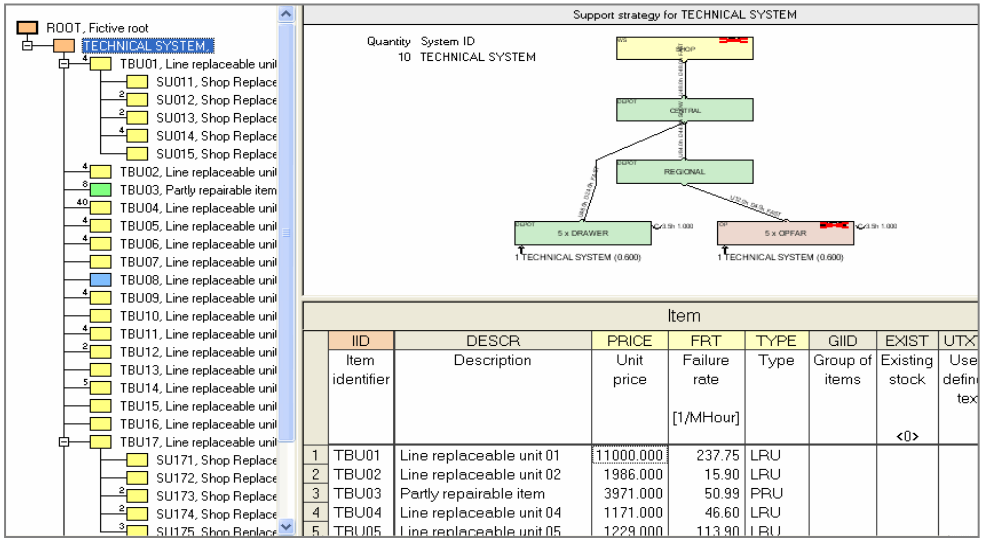


Some OPUS10 key features

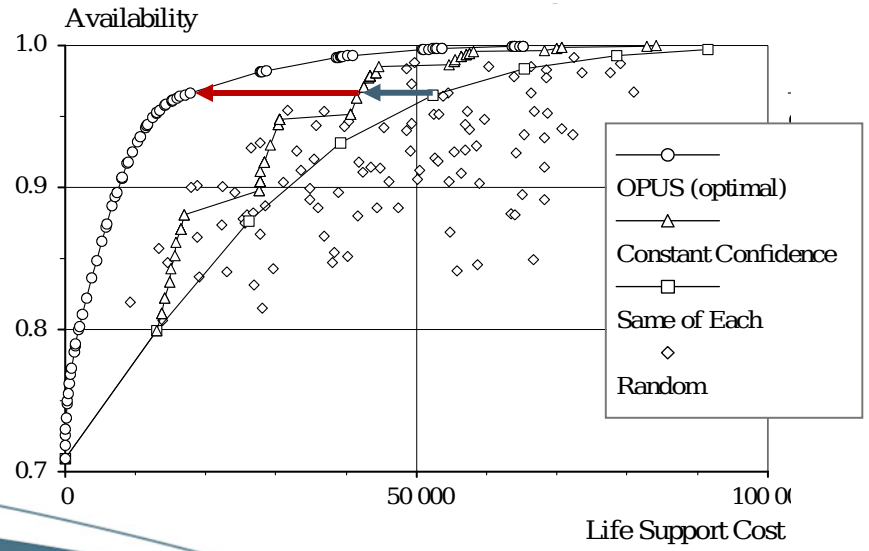
Flexible modeling of different technical systems & support organizations...
(multi-indenture and multi-echelon)

...as well as:

- Repairables, discardables & partly repairables
- Preventive & Corrective maintenance
- Item or Task based maintenance structure
- Lateral support & Backorder priority
- Phased deployment (phase up/ramp down)



	IID	DESCR	PRICE	FRT	TYPE	GIID	EXIST	UTX
	Item identifier	Description	Unit price	Failure rate [1/MHour]	Type	Group of items	Existing stock <0>	Use defin tex
1	TBU01	Line replaceable unit 01	11000.000	237.75	LRU			
2	TBU02	Line replaceable unit 02	1986.000	15.90	LRU			
3	TBU03	Partly repairable item	3971.000	50.99	PRU			
4	TBU04	Line replaceable unit 04	1171.000	46.60	LRU			
5	TBU05	Line replaceable unit 05	1229.000	113.90	LRU			



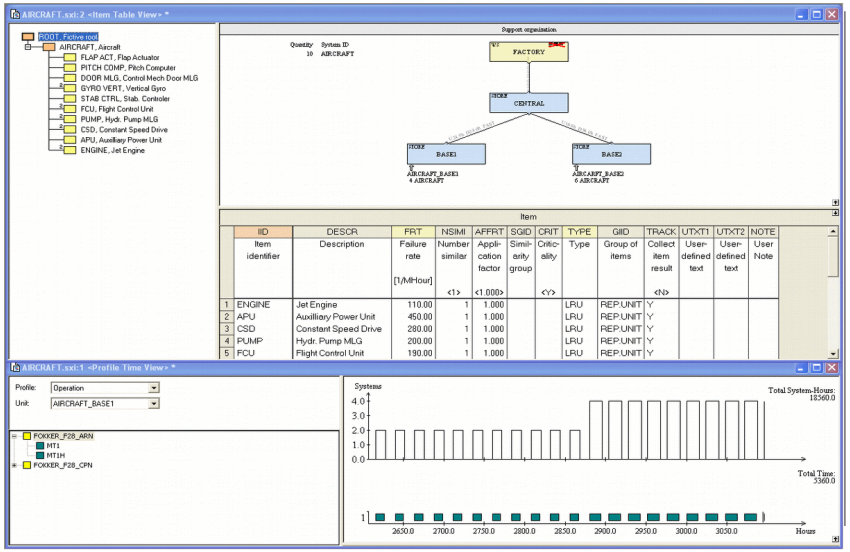
Increased system efficiency while reducing spares investment by 20-40%

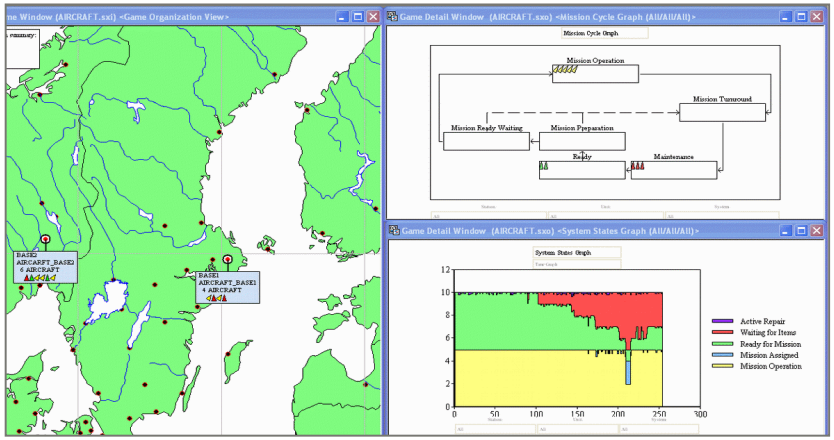
SIMLOX

Simulation of Operations and Logistics Support

SIMLOX

Event based Monte Carlo Simulation
May use the same input data as OPUS10 plus time dependant variables such as operational profiles, resource availibility, etc.





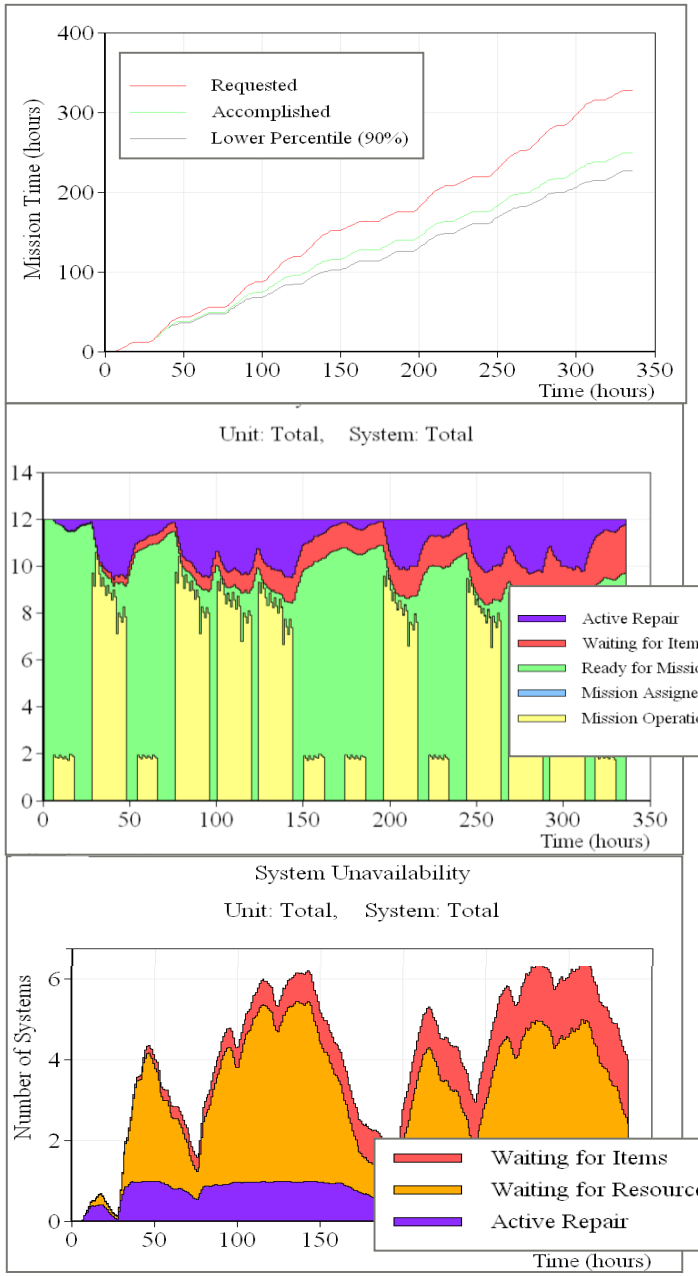
Game mode – Graphical visualization of simulation

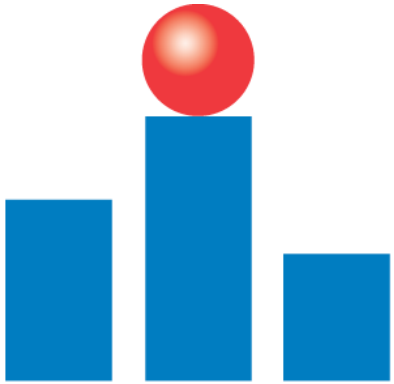
- PLAY, STEP, FORWARD & REWIND -

WPI Services
Systems Engineering & Cost Optimization

SIMLOX

- Analyze complicated logistics scenarios
- Dimension maintenance resources
- Evaluate the ability of technical systems and their support solution to meet operational objectives
- Simulate the impact of time dependent variables – peak loads, shift schedules, transport schedules, etc.
- Verify and extend the OPUS10 model and results
- Introduce efficiency measures more closely related to operational data, e.g.
  - start & success fraction
  - operational time accomplished
  - 95% confidence limit of accomplished operational time



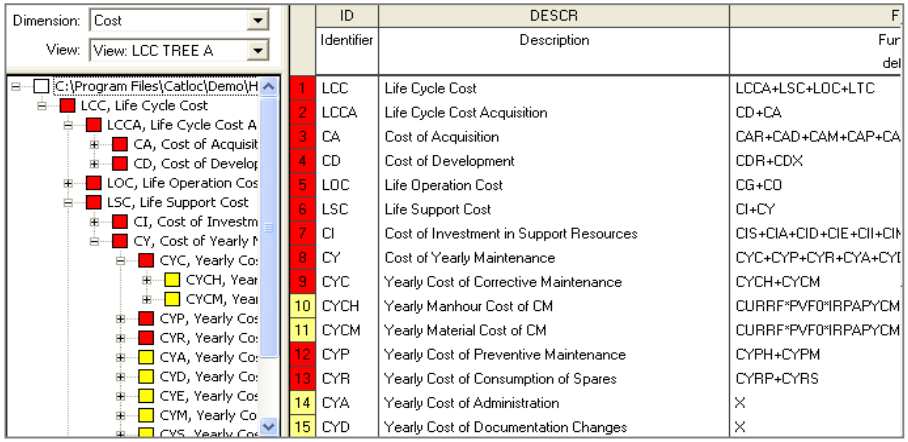


CATLOC

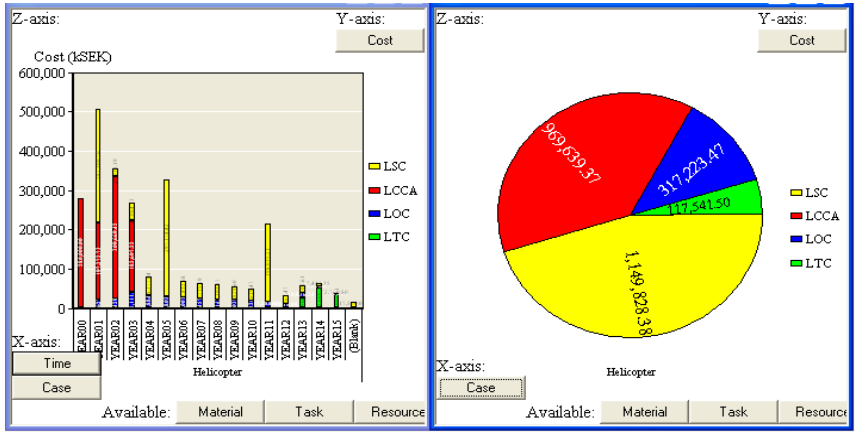
LCC & Cost analysis

CATLOC

Flexible approach to LCC and Cost analysis
LCC structure is 100% user defined (or based on templates)



	ID	DESCR	F
	Identifier	Description	Fur del
1	LCC	Life Cycle Cost	LCCA+LSC+LOC+LTC
2	LCCA	Life Cycle Cost Acquisition	CD+CA
3	CA	Cost of Acquisition	CAR+CAD+CAM+CAP+CA
4	CD	Cost of Development	CDR+CDX
5	LOC	Life Operation Cost	CG+CO
6	LSC	Life Support Cost	CI+CY
7	CI	Cost of Investment in Support Resources	CIS+CIA+CID+CIE+CII+CI
8	CY	Cost of Yearly Maintenance	CYC+CYP+CYR+CYA+CYI
9	CYC	Yearly Cost of Corrective Maintenance	CYCH+CYCM
10	CYCH	Yearly Manhour Cost of CM	CURRF*PVF0*IRPAPYCM
11	CYCM	Yearly Material Cost of CM	CURRF*PVF0*IRPAPYCM
12	CYP	Yearly Cost of Preventive Maintenance	CYPH+CYPM
13	CYR	Yearly Cost of Consumption of Spares	CYRP+CYRS
14	CYA	Yearly Cost of Administration	X
15	CYD	Yearly Cost of Documentation Changes	X



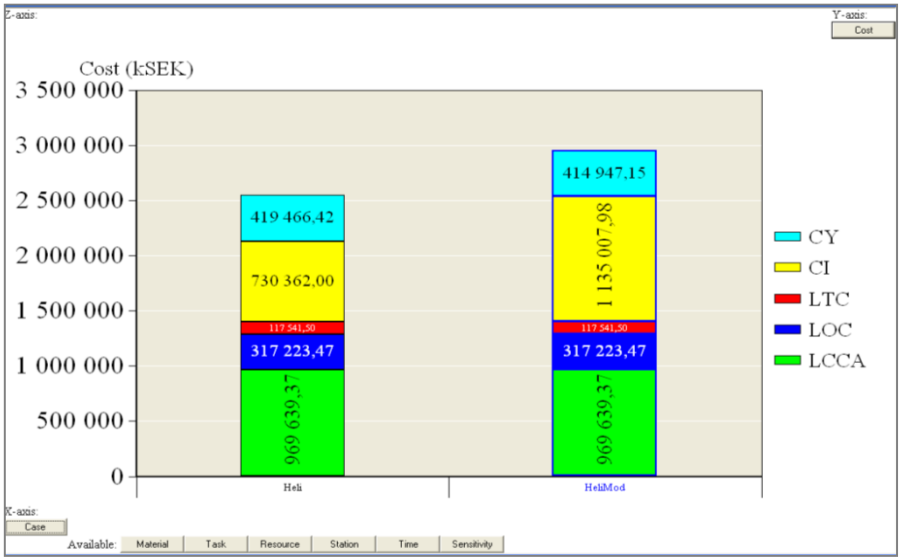
Analysis view with unlimited possibilities to break down and distribute costs over different dimensions

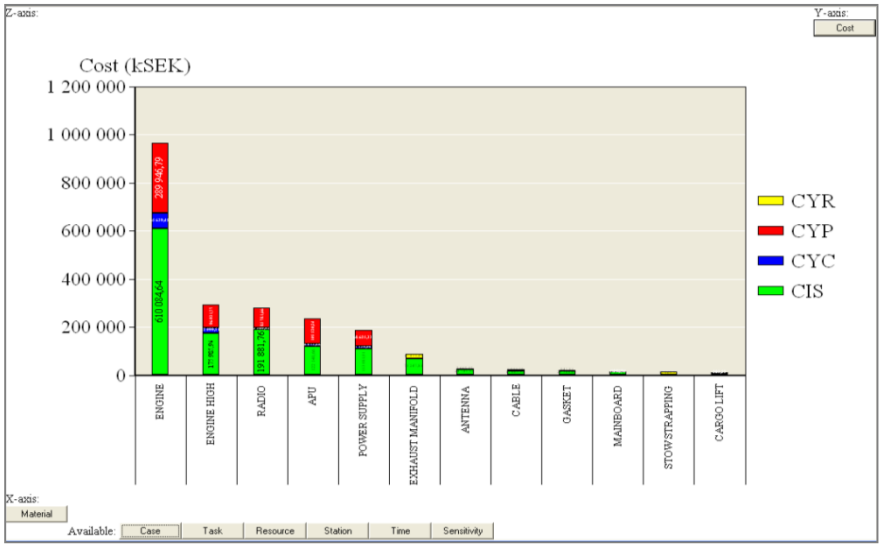
Summation of costs/revenues on aggregate level as well as detailed drill-down for cost drivers

WPI Services
Systems Engineering & Cost Optimization

CATLOC

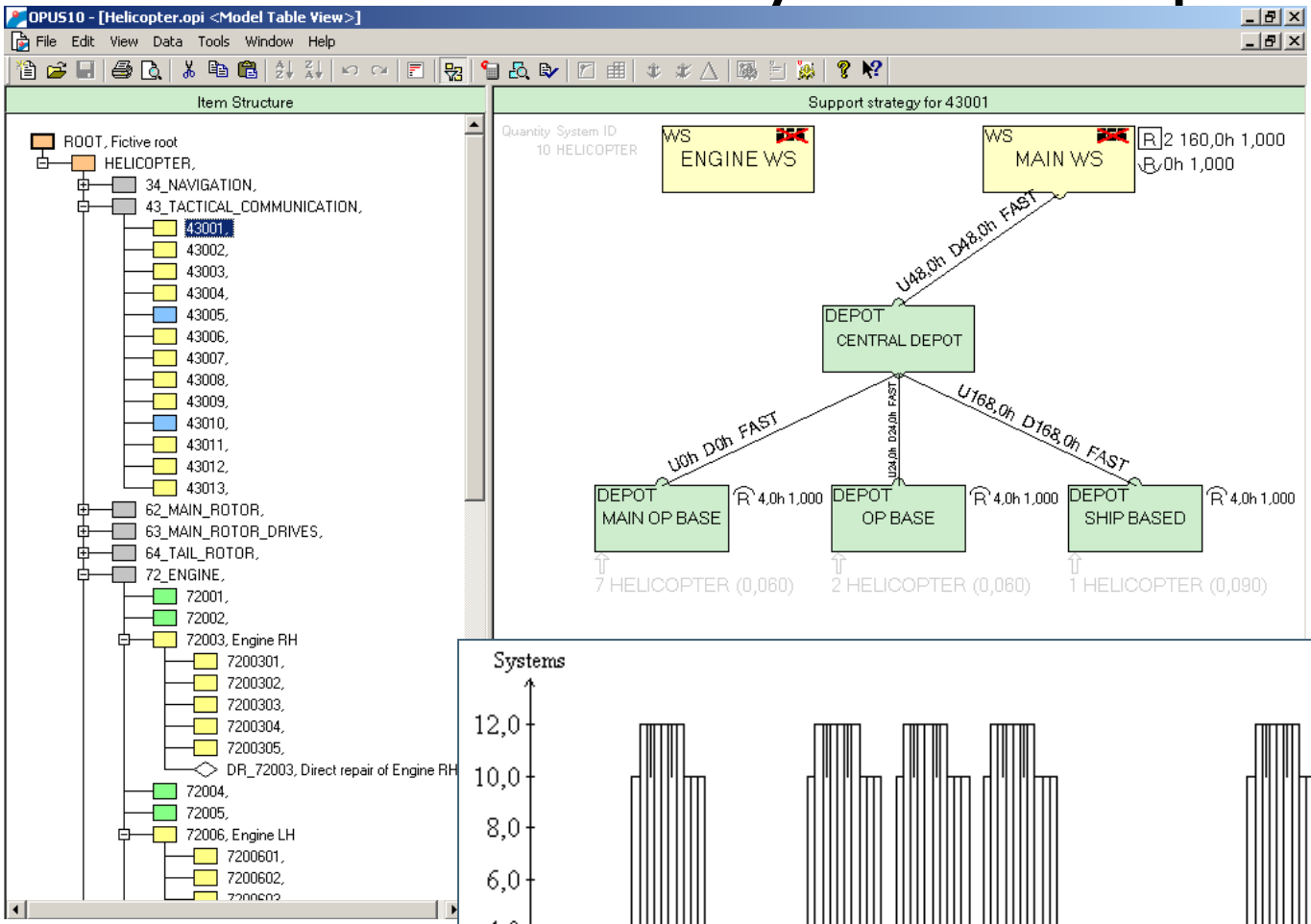
- Comparing different suppliers
- Evaluate different technical configurations
- Comparing different support solutions
- Evaluate new contracts (spec criteria)

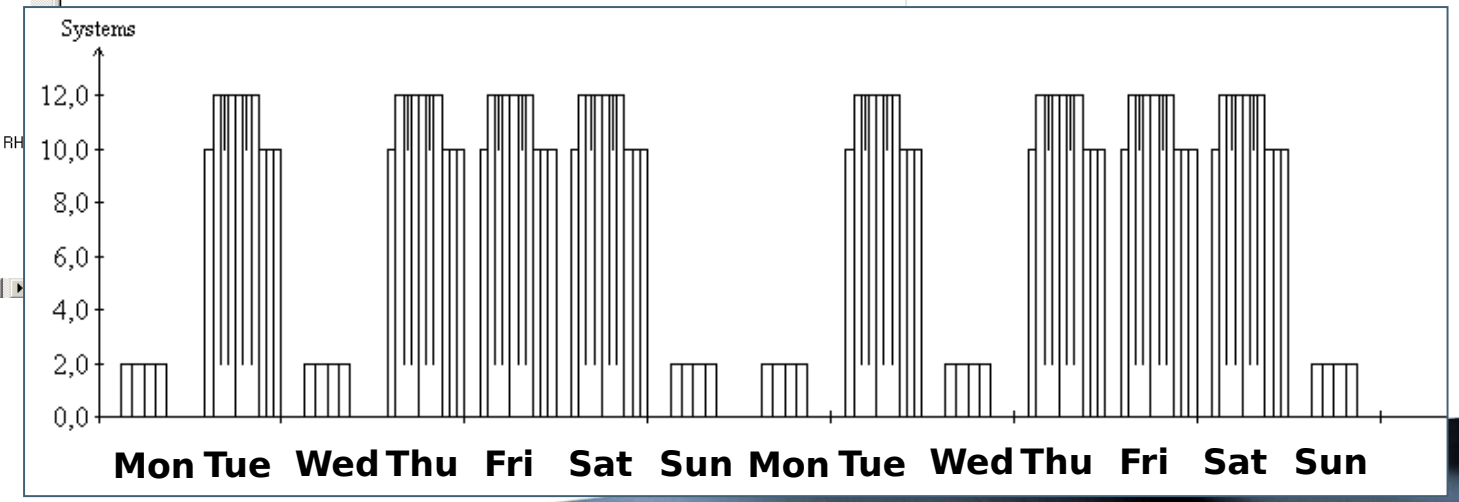




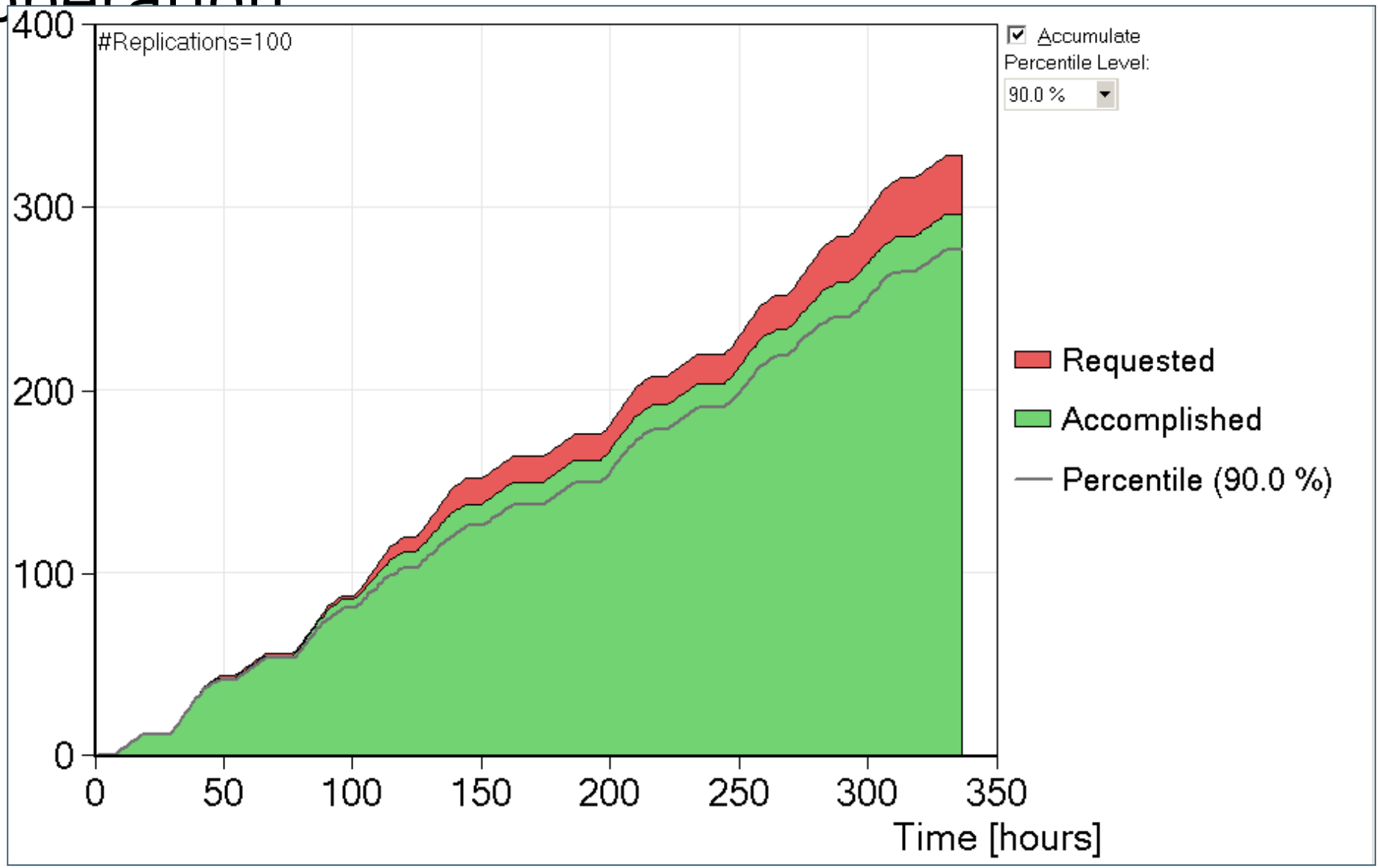
- Identify cost drivers
- Forecast cost / revenue flow
- Model economical impact of changes to design and support solution
- Decision support for replacement of ageing equipment
- Budgeting and Cost control

Analysis Example

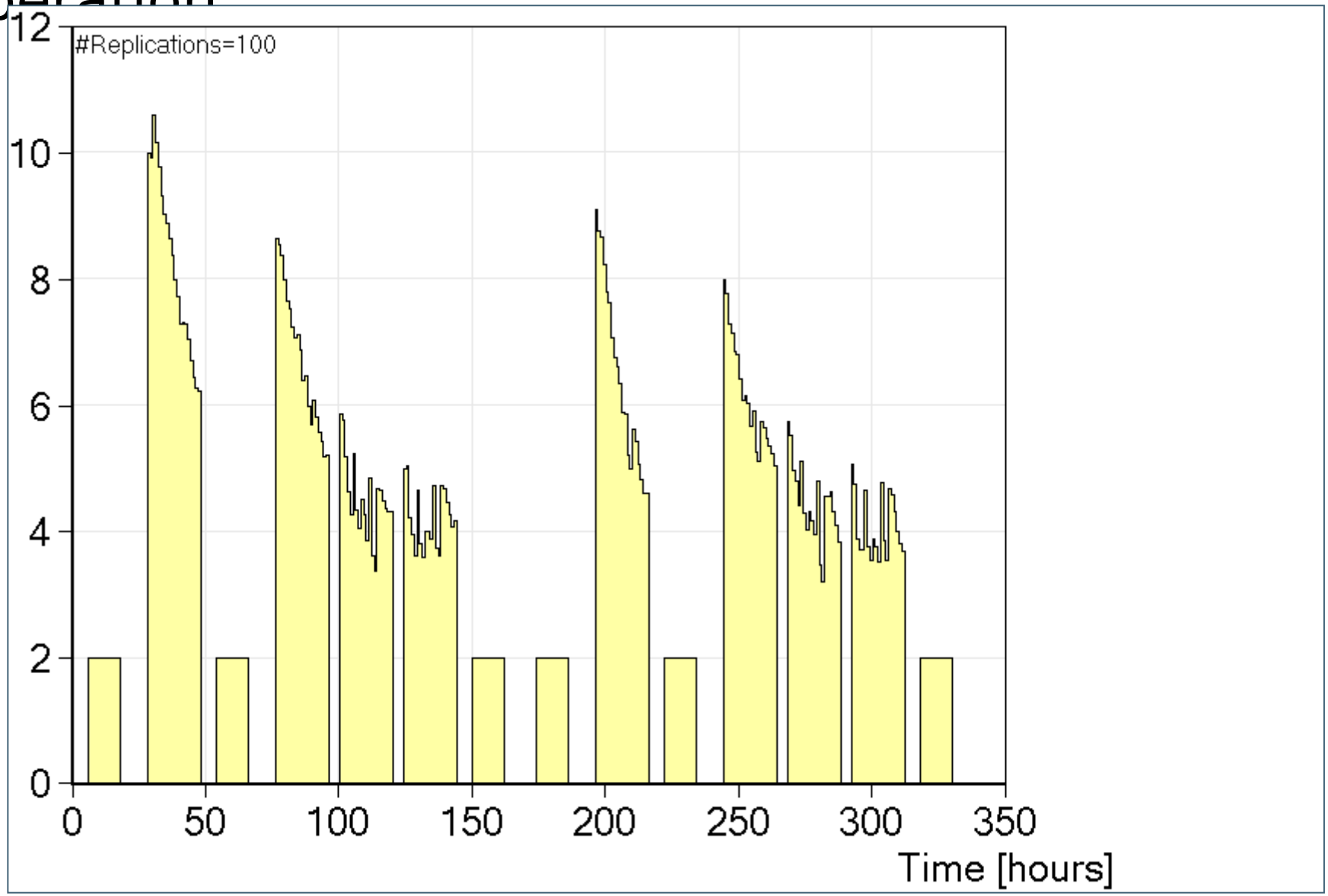




Analysis Example – Accumulated time in operation

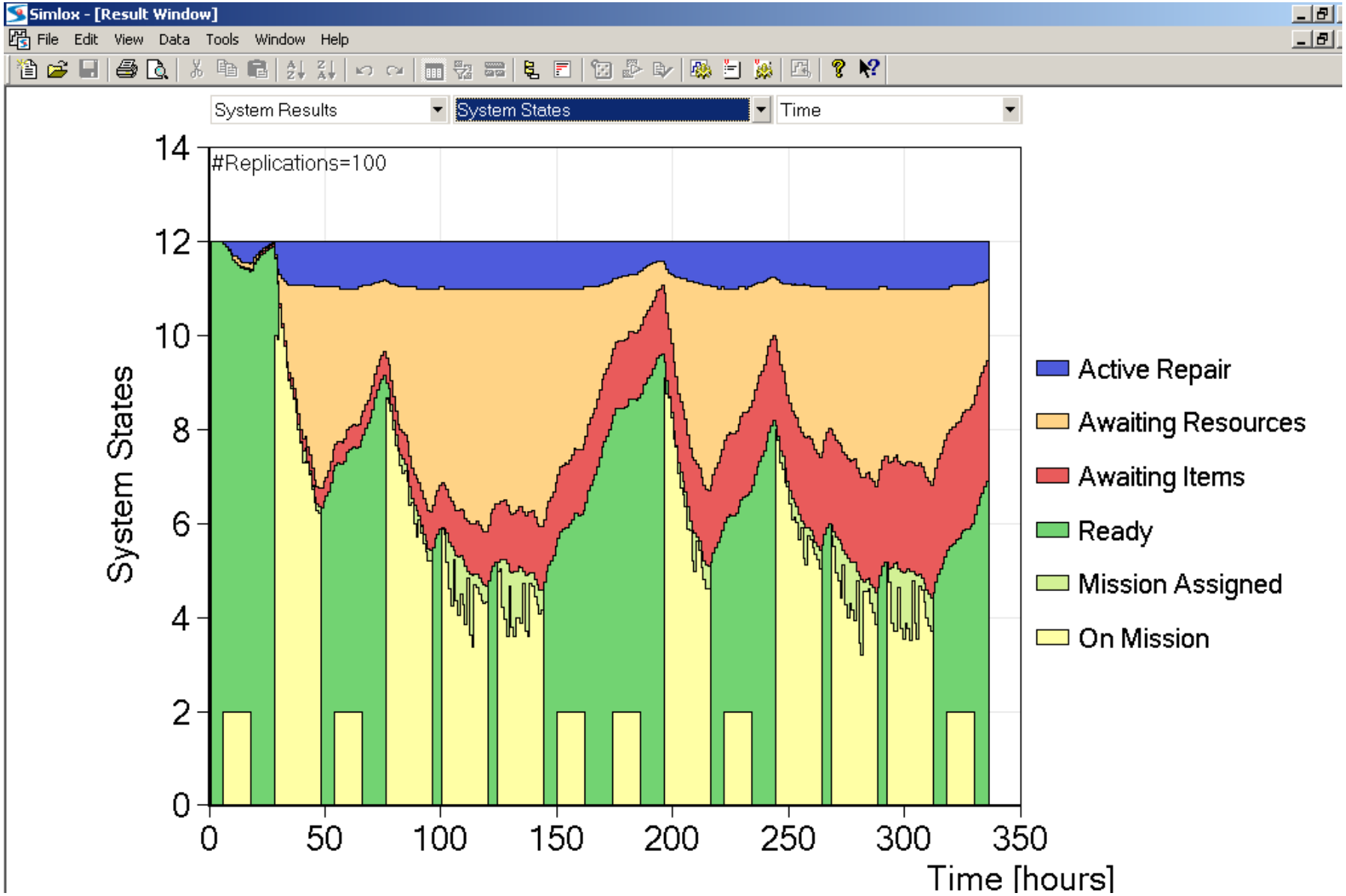


Analysis Example – Number of systems in operation



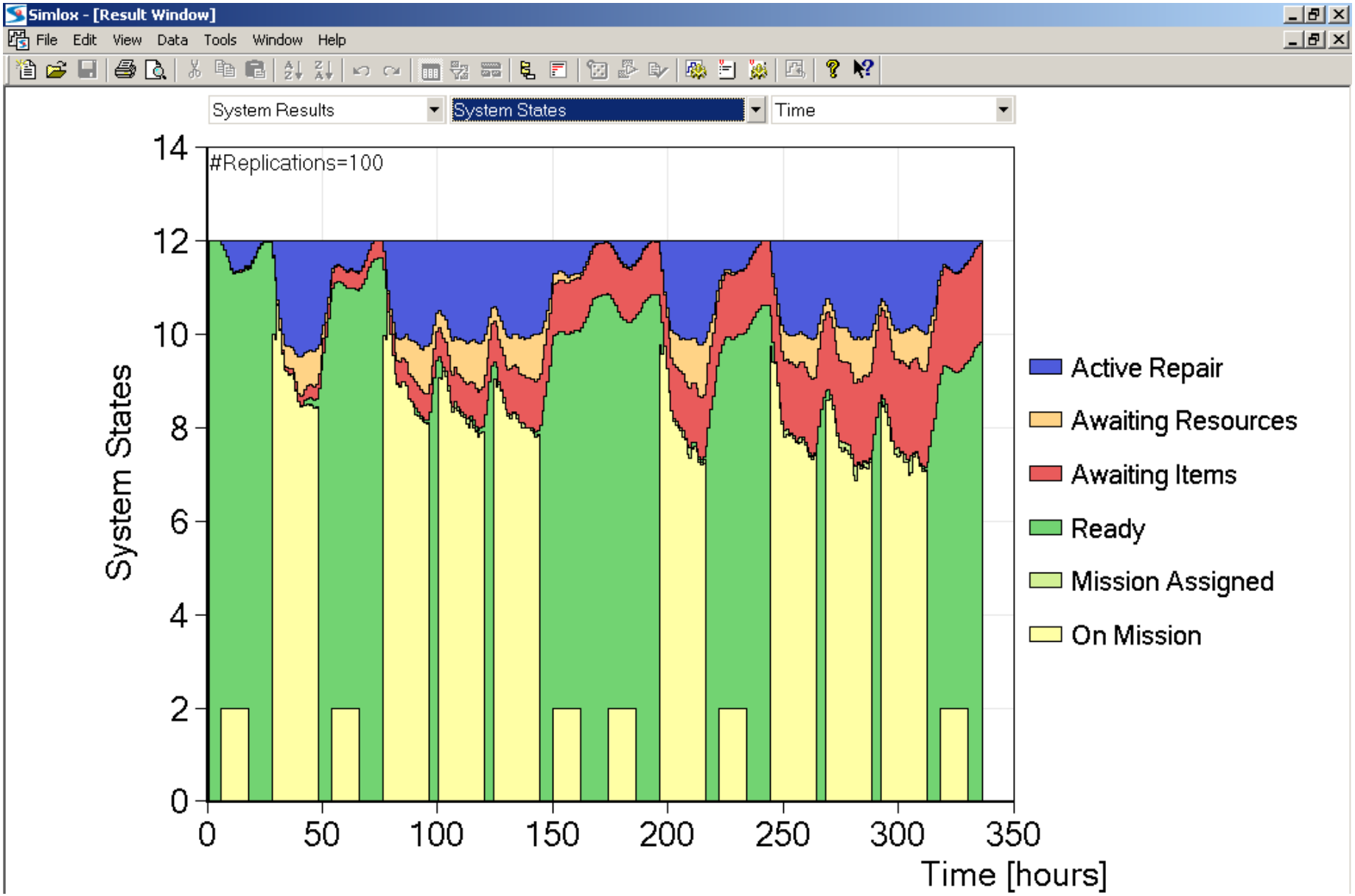
WPI Services
Systems Engineering & Cost Optimization

Analysis Example – Reasons for unavailability

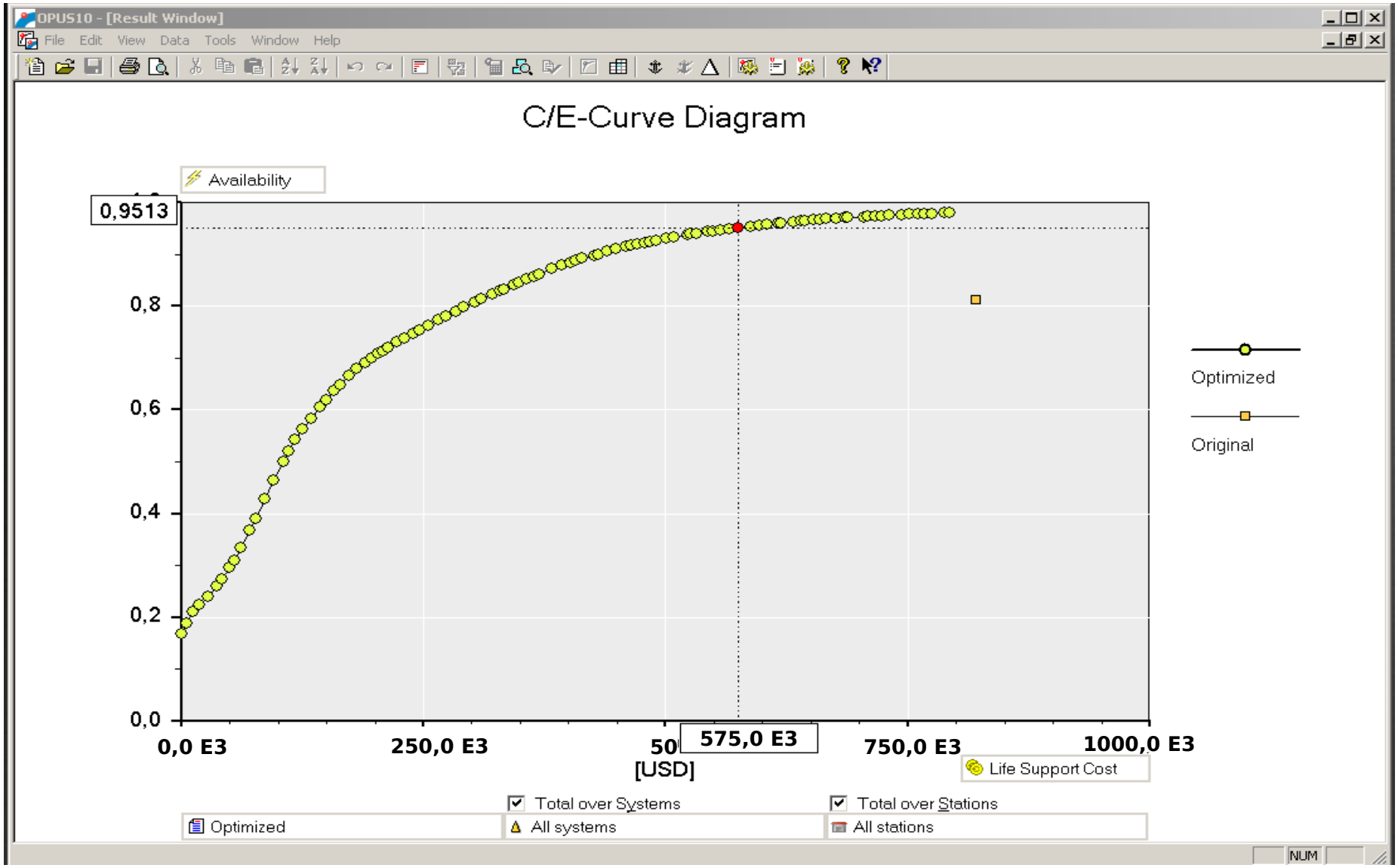


WPI Services
Systems Engineering & Cost Optimization

Improvement 1 – Add repair resources



Improvement 2 – Spares optimization



WPI Services
Systems Engineering & Cost Optimization

Improvement 2 – Spares Optimization

OPUS10 - [Report Window (Helicopter.opo) <Stock_ItemStation (POINT: 40)>]

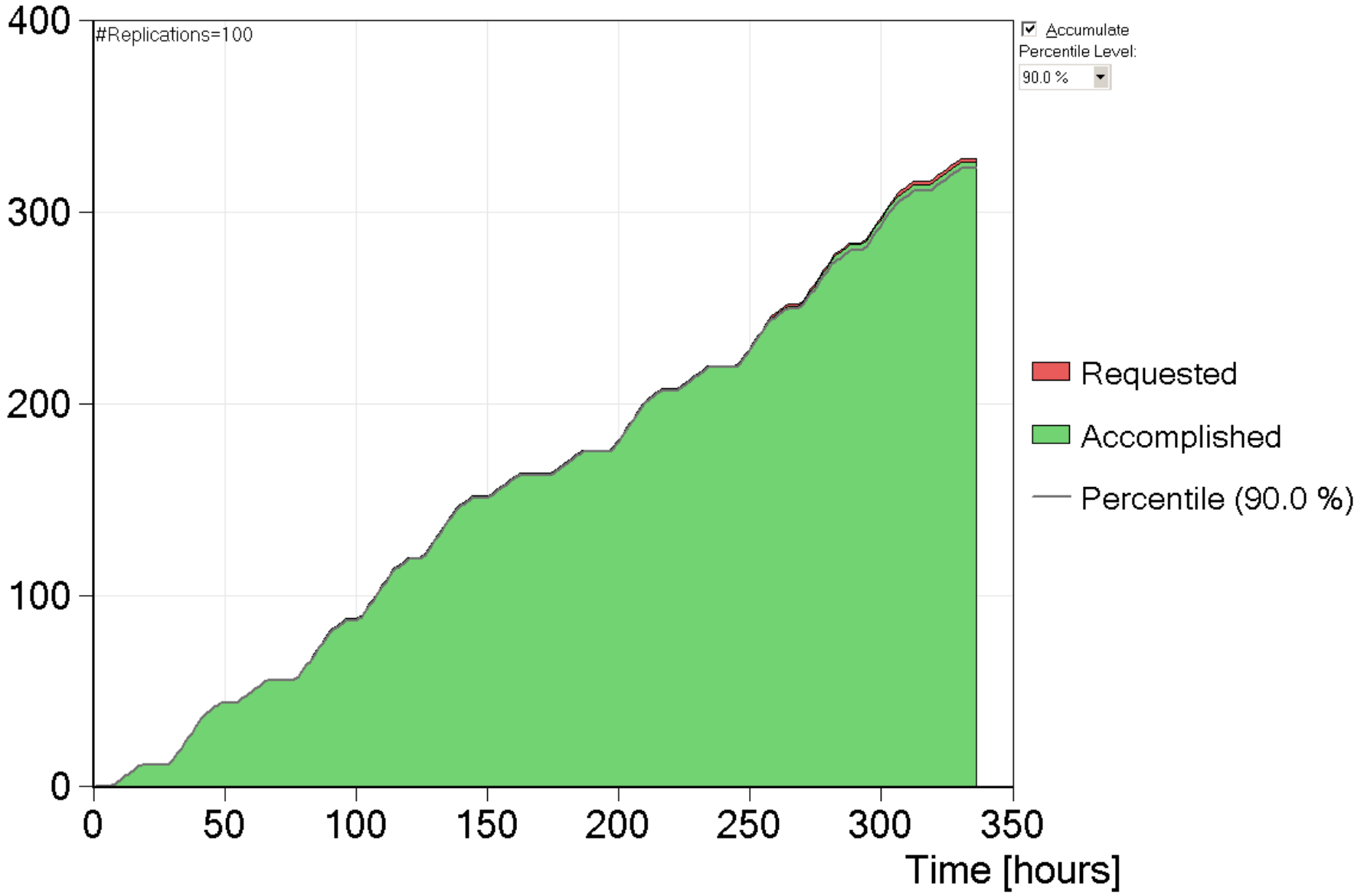
File Edit View Data Tools Window Help

STSIZ / Station: Stock allocation

	IID	STSIZ	STID: Station identifier			
	Item identifier	Total per item	QTY: Total number of each station			
			MAIN OP BASE	OP BASE	SHIP BASED	CENTRAL DEPOT
			1	1	1	1
1	72001	6	1	1	1	3
2	72002	2				2
3	72003	7				7
4	72004	4			1	3
5	72005	5			1	4
6	72006	7				7
7	72007	6	1	1	1	3
8	72008	1				1
9	72009	2				2
10	720010	4			1	3
11	720011	4			1	3
12	720012	4			1	3
13	720013	10	1	1	1	7
14	720014	4			1	3
15	720015	4			1	3
16	62001	10	1	1	1	7
17	62002	4			1	3
18	62003	9	1	1	1	6
19	62004	5			1	4
20	62005	8	1	1	1	5
21	62006	2				2
22	62007	9	1	1	1	6
23	62008	2				2
24	63001	6	1	1	1	3
25	63002	4	1	1	1	1
26	63003	6	1	1	1	3
27	63004	7	1	1	1	4
28	63005	6	1	1	1	3
29	63006	2				2

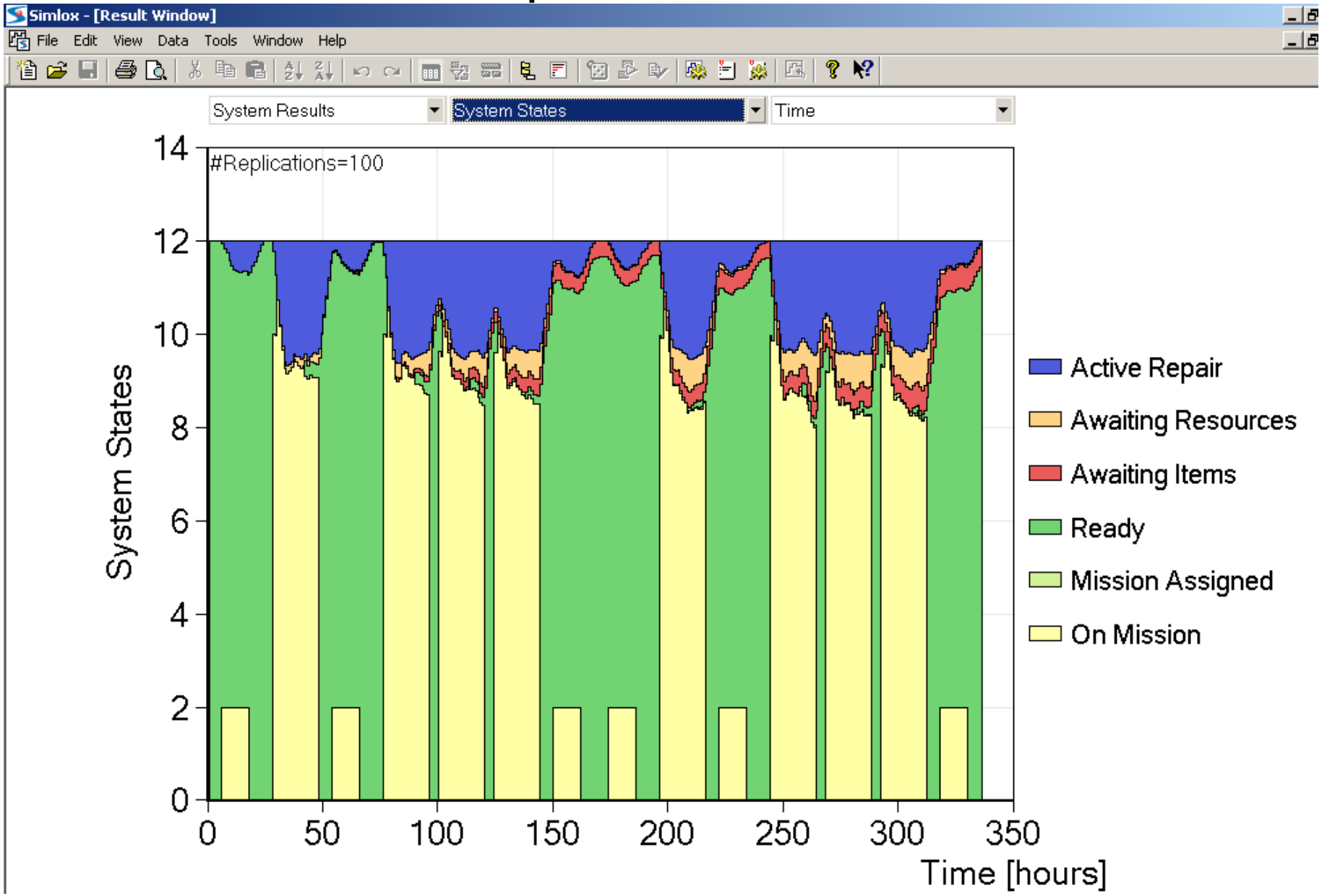
WPI Services
Systems Engineering & Cost Optimization

Results after improvements



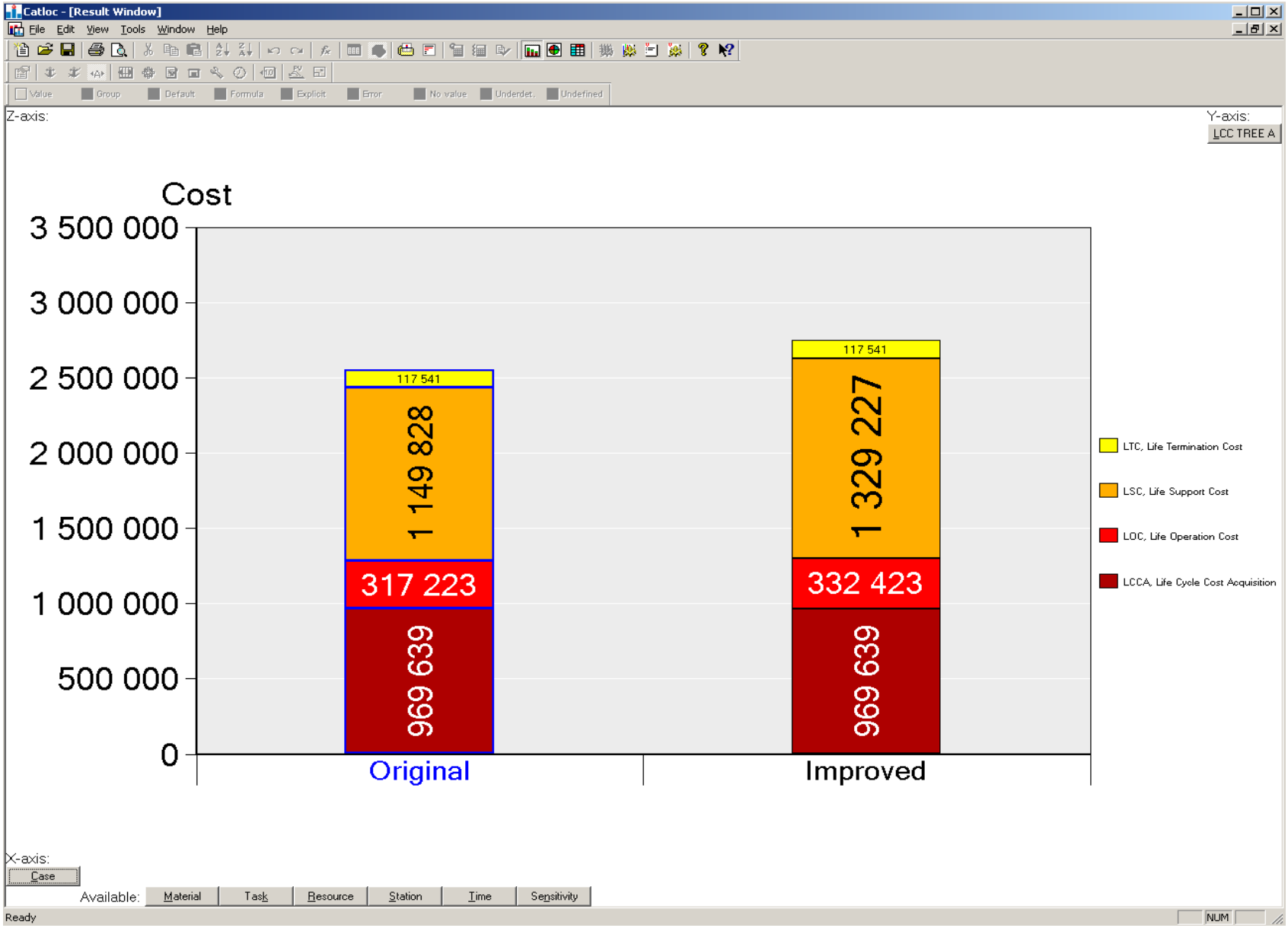
WPI Services
Systems Engineering & Cost Optimization

Results after improvements



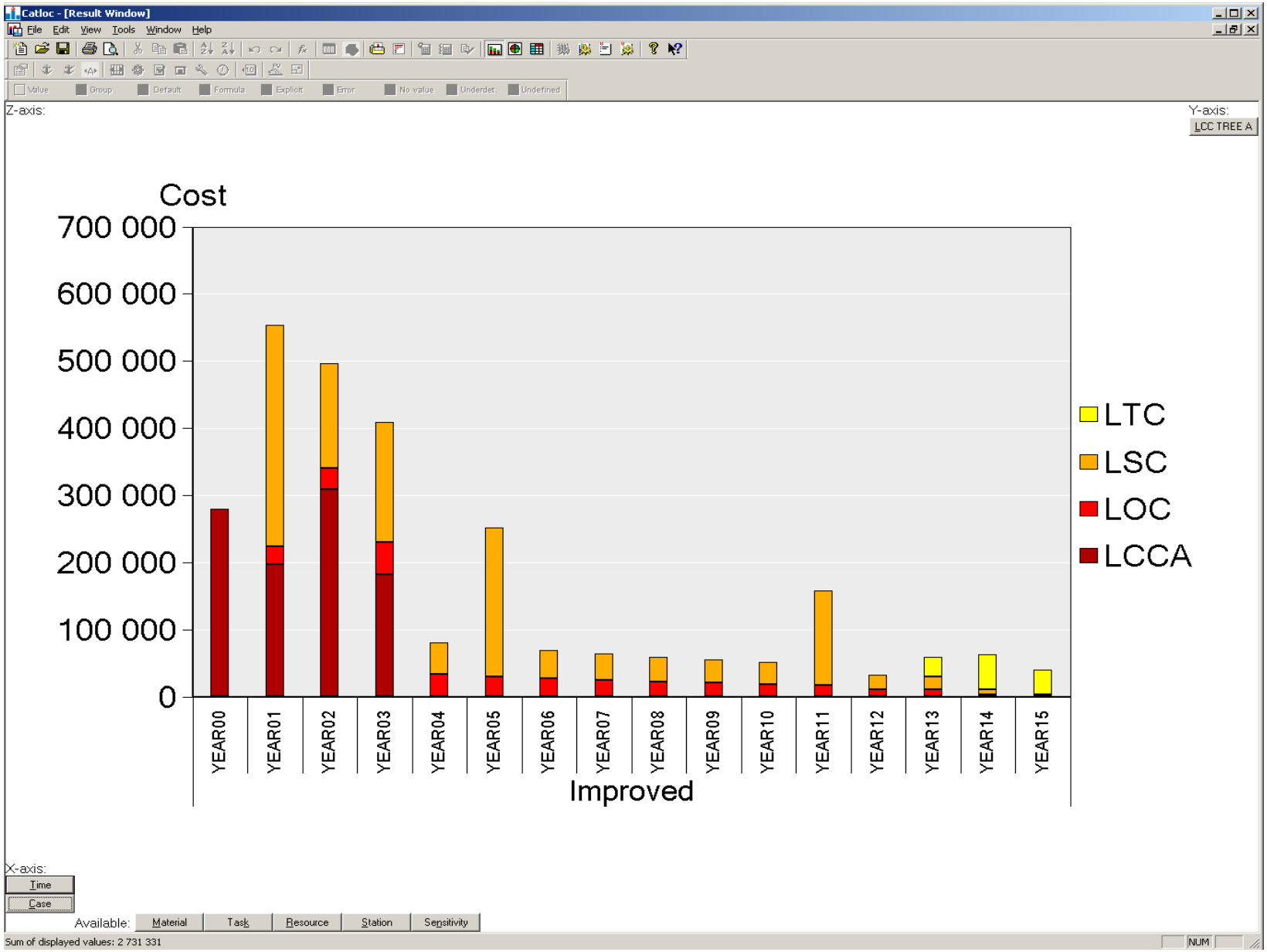
WPI Services
Systems Engineering & Cost Optimization

Comparing Life Cycle Costs



WPI Services
Systems Engineering & Cost Optimization

Cost analysis



WPI Services
Systems Engineering & Cost Optimization

CONCLUSIONS

THROUGH

- Adjusting the number of repair resources
- optimized spares assortment and allocation

THE FOLLOWING CAN BE ACHIEVED

- Mission success rate improved from 85% to 99%
- Increased operational availability from 81% to 95% while decreasing spares investment by 29%

AT THE FOLLOWING COST

- Overall cost increase of 7.6%. At the same availability (81%) cost could be reduced by 18%.